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# WEED ABSTRACTS

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# NOTES FOR READERS OF WEED ABSTRACTS

Weed Abstracts endeavours to provide a comprehensive coverage of the world's literature on weeds, weed control and closely allied subjects. To this end over 370 journals and nearly 100 annual reports are regularly searched. Other journals, reports, bulletins, etc. are abstracted as they are seen. Additional coverage is obtained through agreements with other abstracting organisations.

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As far as possible journal abbreviations given in the World List of Scientific Periodicals are used. Holding libraries in Oxford and elsewhere are also taken from the World List, e.g. O.BO. = Botany Department, Oxford. Numbers at the end of abstracts, e.g. 75(492) are for internal use only.

When a paper is by more than one author, only the address of the first author is given.

Where an abstract is taken from an abstracting journal the acknowledgement follows the abstract, e.g. Herb.Abstr., 2,163. Where it is only quoted in part the acknowledgement is preceded by the word "from", e.g. From Biol.Abstr., 2,294.

The Information Section is always pleased to receive comments and suggestions for the improvement of Weed Abstracts.

* An asterisk before the author's name indicates that only the title of the paper has been seen.

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|---|---|---|---|---|---|
| ac | - acre(s) | in. | - inch(es) | p.s.i. | - pounds per square in. |
| a.e. | - acid equivalent | kg | - kilogram(s) | v/v | - volume/volume |
| a.i. | - active ingredient | l | - litre(s) | w/v | - weight/volume |
| cm | - centimetre(s) | lb | - pound(s) | w/w | - weight/weight |
| d.b.h. | - diameter at breast height | m | - metre(s) | > | - greater than |
| ft | - foot (feet) | ml | - millilitre(s) | < | - less than |
| g | - gram(s) | oz | - ounce(s) | # | - pounds per acre |
| gal | - gallon(s) | post-em. | - post-emergence | ± | - with or without |
| ha | - hectare(s) | pre-em. | - pre-emergence | | |
| | | p.p.m. | - parts per million | | |

Language abbreviations: an initial capital denotes the language of the article, a small letter that of the summary: - Dan. - Danish, Du. - Dutch, E. - English, F. - French, G. - German, It. - Italian, Jap. - Japanese, Nor. - Norwegian, Russ. - Russian, Span. - Spanish, Sw. - Swedish.

See also 652,705,710,717,728,767.

634. MURANT, A.F. (Scottish Hort.Res.Sta., Mylnefield, Invergowrie, Dundee, Scotland). Control of wild oats in sugar beet. Proc. Dalapon Symposium, 1959, 17-18.
In sugar beet:- Poa annua seedlings in the 1-2 leaf stage can be controlled by dalapon 1.5 %; wild oats need 6 % for control but this dose is toxic to the crop, (the maximum amount of dalapon which beet seedlings at the 3 leaf stage will tolerate is thought to be 4.75 %); couchgrass can be suppressed by post-em. dalapon 5 %.
Germination of wild oats appeared to be prevented by dalapon pre-em. applied as a band treatment 1.5 % overall rate, followed by a second application at the same rate 3 weeks later. - J.W.B. [O.W.]

635. SOUTHWICK, L. Control of annual grasses other than wild oats in crops. Proc.Dalapon Symposium, 1959, 15-16.
Seedling Setaria spp. can be controlled in linseed with dalapon 1 %, but in sugar beet higher rates are required.
In potatoes, Echinochloa crus-galli can be killed by dalapon 2.5 %, or by a delayed pre-em. spray of dalapon + dinoseb.
In peas, annual grasses up to 1 in. tall can be controlled by 0.75-1 % without injuring the crop; dalapon + dinoseb may also be used.
In maize from emergence to 3 in. high, dalapon 1 % will kill many grass weed seedlings.
Rape seed has been shown to be tolerant to dalapon at low rates in Canada, while cranberries, although susceptible to damage, have been successfully cleared of grasses by pulling material soaked in dalapon solution over the crop in contact with the weed foliage but not touching the crop foliage. - J.W.B. [O.W.]

636. SAMBORSKI, D.J., PERSON, C. and FORSYTH, F.R. (Dep.Agric.Res.Sta., Winnipeg, Manitoba, Canada). Differential effects of maleic hydrazide on the growth of leaf and stem rusts of wheat. Canad.J.Bot., 1960, 38,(1),1-7, tabs.6,bibl.17.
Intact plants supplied with MH through the roots, detached leaves floated on MH solutions, and spores germinated on MH solutions in agar were used in the investigations. In each case, the growth of leaf rust was inhibited at concentrations of MH which had no effect on the growth of stem rust. Some resistant wheat varieties became susceptible to rust after treatments with concentrations which were not inhibitory to rust development. In some experiments, leaf rust races reacted differentially to MH. Both nutritional and inhibitory factors could be involved in resistance and host-pathogen specificity. - Author's Summary (modified). - D.M.L.S. [O.R.]

637. BECKER, G. (Friederich-Wilhelms-Univ., Bonn, Germany). Versuche zur Unkrautbekämpfung in Kartoffelbeständen. [Experiments on weed control in potatoes.] Thesis Friederich-Wilhelms-Univ., 1959, pp.39, figs.2,tabs.16, bibl.34.
In 2 years' experiments calcium cyanamide was applied before planting, immediately after planting or shortly before crop emergence. These treatments were compared with the usual 3 hoeings, 1, 2 or 3 hoeings at various times after planting, [hand] weeding and uncultivated plots. None of the treatments gave good weed control. Crop yields were best with early cultivations and 1 cultivation 1 month after emergence was very nearly as good as the best treatment (excluding the [hand] weeded plots). None of the treatments had any appreciable effect on potato size or starch content. - L.K. [211(43)]

638. DERSCHEID, L.A. and WALLACE, K.E. (Exp. Sta., State Coll., Brookings, S.Dak., U.S.A.) Weed control in field crops. Circ.S.Dak.agric. Exp.Sta., 1959, 148, pp.15, figs.2.
Recommendations are given for the following crops:- wheat, barley, oats, rye, flax, maize, sorghum, soybeans, sugar beet, legumes, pastures and rangeland. - D.M.L.S. [27(78.3)]

639. DELAHUNTY, E. (Dep.Agric., Ashburton, New Zealand). Linseed. N.Z.J.Agric., 1959, 99,(6),561-3.
Aerial application of crop desiccants such as sodium arsenite and PCP has been successful for ripening linseed to allow direct heading of crops infested with willow weed [Polygonum persicaria]. - D.M.L.S. [O.RE.]

640. BOITEAU, R., DURGEAT, L.A. and LHOSTE, J. Study of a new selective weed control in sugar beet. pp.15, figs.1,tabs.8.
Trials in 1959 with HS-55 (N-cyclo-octyl-N'-dimethylurea 16% + butinol ester of m-chloro carbanilate 11%) applied as a liquid (27%) at 4-6 l/ha pre-em. and as granules (0.675%) at 150 kg/ha pre- or post-em. indicated that the best time to apply is at sowing or on the next day. Granules applied after singling

gave, in general, insufficient weed control; applied pre-em., they gave satisfactory weed control but were injurious to beet. As a liquid 4 l/ha in 500 or 100 l water seemed to be the minimum effective dose and in 1 trial gave good control of Chenopodium sp. and Polygonum aviculare; Stellaria media required 6 l/ha. Both rates, however, seriously reduced the number of beet seedlings and 6 l/ha also reduced yields considerably. Results were satisfactory on soils rich in humus when drillings were as deep as 2 and 3 cm., but were less successful on light or ill prepared soils. In 2 trials rain after sowing (with application within 5 days) reduced the compound's selectivity. - D.M.L.S. [F.P.C.]

641. DENMARK. Kemisk bekaempelse af alm. fuglegraes m.fl. i oliehør. [The chemical control of chickweed etc. in linseed.] Medd. Statens Forsøgsvirksomhed i Plantekultur, 1960, 637, pp.2, (Dan.), tabs.2.

On the basis of several experiments carried out from 1955-9 in which dinoseb 0.5 kg/ha + MCPA 0.5 kg/ha gave bigger seed yield increases and bigger increases in yield of fat and protein (without any effect on the iodine number) than dinoseb 0.7 kg/ha alone it is recommended that the mixture be applied in 500-600 l/ha when the crop is 4-6 cm tall. - L.K. [94(489)]

642. KIRINDE, S.T.W. (Dry Zone Res.Sta., Maha Illuppallama, Ceylon). Weed control problems in the dry zone. Trop.Agriculturist, 1958, 114,(3),175-82, tabs.1,bibl.2.

A general survey with some account of the principal weeds in irrigated paddy and in other crops of the dry zone in Ceylon. Excellent results are being obtained with the Japanese rotary hoe in irrigated row sown and transplanted paddy. - D.M.L.S. [O.RE.]

643. JONES, L. (Grassland Res.Inst., Hurley, Maidenhead, Berks., England). Control of perennial grasses in lucerne and clovers. Proc. Dalapon Symposium, 1959, 11-12.

Poa trivialis and Agrostis gigantea in lucerne are controlled by dalapon 5-7 # applied in March, October, or after defoliation in the summer, (March being the most effective time to spray). On seedling lucerne, dalapon 3 # 6 weeks after planting has given good control of grass seedlings and increased yield 15% in the first harvest year. Variable results have been found when dalapon was used on clovers:- 2 # in early March gave complete kill; Ladino clover [Trifolium repens var. latum] appeared to be the most susceptible, followed by S.100 and S.184; favourable results were obtained when 1 # was applied in early March, followed by 1 # 1 month later.

In N.A.A.S. observation trials, dalapon 5-10 # was found to be safe on lucerne in the dormant season and gave excellent control of grasses, but dicotyledons frequently replaced the grasses and proved difficult to remove. It is suggested that 1-2 # might be sufficient to check grasses without leading to encroachment by dicotyledons.

In New Zealand, dalapon 2 # applied to lucerne grazed for 5 years suppressed grasses enough to give lucerne a new lease of life; similarly on white clover [Trifolium repens] stands.

Couch grass [Agropyron repens] can be controlled in lucerne by dalapon 5 # applied in spring.

Dalapon + 2,4-DB, or + MCPB, can be used in the establishment of seedling lucerne without the need of a nurse crop. - J.W.B. [O.W.]

644. CALDER, J.W. (Twyford Hill Ltd., Adderbury, Banbury, Oxon, England). Pasture renovation by dalapon and chemical ploughing. Proc.Dalapon Symposium, 1959, pp.3-4.

In New Zealand hill country, existing turf can be killed, when actively growing and 3-5 in. high, by dalapon 5 # in 20 gal water; the addition of amitrol 1 # will kill broad-leaved weeds also. Cost of the mixture is approximately £5/ac. The new seed mixture should be sown on the dying herbage some 10 hours after spraying, this also costs approximately £5/ac. This renovation method must be used during a period of high humidity to be effective. - J.W.B. [O.W.]

645. ELLINGTON, C.P. and SANTELMANN, P.W. (Univ.Maryland, U.S.A.) Eradication of broom sedge and other weeds from permanent pastures. Agron.Mimeo.Univ.Md, 1960, 10, pp.3.

The eradication of broom sedge [Andropogon virginicus] and other weeds from permanent pastures by good management practices is discussed; these include fertilizing, reseeding and renovating, grazing and clipping, and, if necessary, the application of 2,4-D or dalapon. - J.W.B. [96(75.2)]

646. ELLIOTT, J.G. (Dep.Agric., Univ. Oxford, England). Rejuvenation of hill pastures in Great Britain. Proc.Dalapon Symposium, 1959, 9-10.

In contrast to New Zealand, autumn spraying

is favoured and higher rates of dalapon appear necessary (either in spring or autumn 7.5-10 lb are needed). Extreme year to year variation in the effect of dalapon on some grass species (e.g. Deschampsia caespitosa), and the high cost of dalapon, cause difficulties in Great Britain. Dalapon 3.75 lb applied in May has given 85-90% kill of Nardus stricta and Agrostis tenuis, and 7.5 lb killed 100%. Deschampsia flexuosa required 15 lb for 85-90% kill and Holcus mollis was highly resistant. Approximately twice as much dalapon was required in September to give the same effect. Grass seed sown 5-6 weeks after May spraying became well established as long as lime and phosphate were applied at the same time. Sod-seeding has been unsuccessful in Great Britain, the dying tussocks often being too dry for the seed after germination.

In forestry trials in Great Britain, the effectiveness of dalapon decreased when less than 30 gal/ac of solution was applied. Volume of spray aimed at in aerial application of dalapon in New Zealand is 20 gal/ac, but as long as uniform coverage is obtained, 10 gal/ac and less may be recommended. - J.W.B. [O.W.]

Noted

647N. KROPAC, Z. and ZEMANEK, J. Strucne vysledky s pouzivanim herbicidu v kukurici podle svetove literatury. [A brief summary, taken from the world literature, of the results of applying herbicides to maize.] Sbornik CSAZV, 1959, 5,(12),1703-10, (Czechoslovakian,russ.g.)
From Landw.Lit.Tschecho., 1959, 544.

648N. SANTELMANN, P.W. and MEADE, J.A. (Univ.Maryland,U.S.A.) Control winter annual weeds in alfalfa. Univ.Md Fact Sheet, 1956, 129, pp.2, figs.1.

## HORTICULTURAL, ORNAMENTAL AND PLANTATION CROPS

See also 635,705,708,723,728,730.

649. IMMEL, R. (C.H.Boehringer Sohn,Ingelheim aur Rhein,Germany). Unkrautbekämpfung in Spezialkulturen mit einem neuen Herbizid. [Weed control in special crops with a new herbicide.] Mitt.biol.ZentAnst.Berl., 1959, (97),134-6, (G.).

In peas, neburon 0.75 kg/ha pre-em. gave good, and 2.25-2.8 kg/ha complete, weed control; the crop suffered only minor injury even at the highest rate. In bush beans 0.75-2.25 kg/ha pre-em. raised yields and gave good control - the main weeds on the control were Senecio, Sonchus, Capsella and Sinapis. In potatoes pre-em. applications >1.5 kg/ha appeared to reduce yields somewhat. In scorzonera, neburon 0.75-1.9 kg/ha in the cotyledon stage caused severe injury; chlorpropham caused only temporary injury. Spinach treated in the cotyledon stage with neburon 0.75-1.9 kg/ha was killed and with monuron 0.25-0.5 kg/ha or chlorpropham, severely affected. Carrots and onions were unaffected by pre-em. application of neburon in dry soils; heavy rainfall or irrigation caused injury, especially to onions. In greenhouse experiments pre-em. treatment with neburon 0.75-2.8 kg/ha promoted the growth of mustard and cucumber. - L.K. [O.W.]

650. ORTH, H. (Biol.Bundesanst.Landw., Fischenich Bez.,Köln,Germany). Problematik und Aussichten der Unkrautbekämpfung in Spezialkulturen. [Problems of and prospects for weed control in special crops.] Mitt.biol.ZentAnst Berl., 1959, 97,125-34, (G.), bibl.40.

A review with particular reference to the use of (1) chlorpropham in carrots and onions, (2) of monuron in asparagus and (3) weed control in sugar beet. In the discussion it was stated that DCU 25 kg/ha had given promising results for the control of couch [Agropyron repens] in sugar beet when applied pre-em. and that chlorpropham 12 kg/ha 16 days before planting had given good results in lettuce (Salat), leeks and French beans (Buschbohne). - L.K. [O.W.]

651. NETHERLANDS. De bestrijding van planteziekten en onkruiden in landbouwgewassen. [The control of diseases and weeds in agricultural crops.] Min.Landb.Rijkslandbouwvoorlichtingsdienst Zeeuwsch-Vlaanderen, 1960, pp.20, (Du.)

p.14-20 give recommendations for a number of crops and for uncultivated ground; these include dinoseb 7.5 l in 800 l of water (low pressures and large droplets) 10 days after the emergence of French beans. - L.K. [W15(492)]

652. CANADA. Chemical weed control 1958-60. Wall Chart Brit.Columbia Dep.Agric.,Victoria, 1958, tabs.1.

Recommendations are given for 28 crops or crop groups (including horticultural crops) and for lawns and unspecified woody growth. They

include potassium cyanate 8-10 # pre-em. in table and sugar beets and propham 5-6 # to seed crops of turnips and beets 2-4 in. high. D.M.L.S. [218(71)]

653. * PETUNOVA, A.A. [The use of mineral oil herbicides in coriander and investigations of their effect on crop and weed plants.] Diss.Vses.Inst.Zash.Rast., 1959.
Cf. Weed Abstr., 8,379.

654. CORRALES MACEDO, A. Empleo de hierbicidas en el cultivo de la cebolla. [The use of herbicides in onion growing.] Programa Coop.de Expt.Agropecuaria.B.Trimes de Expt. Agropecuaria, 1959, 8,(1),5-10.
Chlorpropham applied at 8 quarts/ac in 5-100 gal of water before emergence seriously checked the germination of onion seeds, but the same treatment applied to a 70-day-old crop gave excellent results in controlling weeds, with no sign of crop injury. Weed control with monuron, at low, medium and high concentrations, was considerably less satisfactory, and established plants suffered more injury than from chlorpropham, but monuron was the less harmful pre-em. herbicide. Johnson grass (Sorghum halepense) was little checked by chlorpropham or hand weeding, and only moderately controlled by monuron. Yields were highest on the chlorpropham plots, but bulb quality was slightly better on handweeded plots. The monuron low- and medium-concentration treatments were the most economic. - Hort.Abstr., 30,585.

655. DAME. (PflanzenSchAmt.,Münster, Germany). Zur Bekämpfung von Unkraut, Krankheiten und Schädlingen des Spargels. [The control of weeds, diseases and pests in asparagus.] Gesunde Pflanze, 1960, 12,(3), 52-9, (G.), figs.5,tabs.2.
Includes the information that monuron is more selective than simazine when applied pre-em. to newly sown asparagus. - L.K. [O.W.]

656. DARHOOSE, S. Weed control in carrots. Agric.Res.Rev.,Egypt, 1958, 36,515-27, figs.
The chief weeds present in two trials carried out in Egypt were grasses (particularly Cynodon dactylon), Chenopodium murale and Portulaca aegyptica. The first proved resistant to both Crag (MCPES) at 1-2 kg/ac and Tropotox (MCPB) at 0.25-1.5 #, and the others to Crag. At the lowest rate, Tropotox was practically harmless to the carrot crop and gave satisfactory control of broad-leaved weeds, but at higher rates crop injury was considerable. Neither product is recommended for weed control in carrots. - Hort. Abstr., 30,590.

657. WOOD, J. (Exp.Husbandry Fm,Kirton, Lincs.,England). Control of grasses in bulb growing. Proc.Dalapon Symposium, 1959, 25.
TCA 4 # applied to Narcissus spp. and Tulipa spp. pre-em. for Poa annua control at first appeared promising, but flowers produced in the second season after spraying were severely injured. Similar results were obtained with dalapon 8 and 12 #, but 4 # appeared to be more promising, although some damage to the bulb foliage was observed. Iris spp. appeared to be more resistant to dalapon than narcissus or tulip. Injury seemed more likely to occur when the spray was applied to bare soil rather than ground covered with grass. - J.W.B. [O.W.]

658. WATSON, A.J. and LEASURE, J.K. (Dow Chem.Co.,Midland,Michigan,U.S.A.) Zytron... ...a promising material for crabgrass control. Down to Earth, 1959, 15,(3),2-5, figs.2,tabs.5.
Zytron (O-(2,4-dichlorophenyl)-O-methylisopropylphosphoroamidothioate) can act as a selective root toxicant, a selective herbicide or a systemic seedicide. When applied at ca. 10-20 # before emergence it has given excellent control of Digitaria ischaemum, D. sanguinalis, Setaria spp., Echinochloa crus-galli, Eleusine indica, Panicum spp., Amaranthus retroflexus, Portulaca spp., Chenopodium album and and Ipomoea spp.; applied after emergence promising results have been given on Muhlenbergia schreberi, Stellaria media, Cerastium vulgatum, Lamium amplexicaule and Oxalis stricta. Zytron has had little effect on Trifolium repens, Taraxacum officinale, Rumex spp., Plantago spp., Cirsium arvense, Agropyron repens, Festuca elatior or Paspalum spp. On Digitaria applications shortly after emergence have proved effective and applications between August 1st and October 1st have prevented the setting of viable seed. Merion and Kentucky bluegrasses are especially tolerant while slight to severe contact injury may be caused to red fescue, Bermuda grass, centipede grass, St. Augustine grass or bent grass. Most ornamentals are tolerant with the exception of Iris and Dichondra. The chemical persists in the soil for 6-10 weeks and reseeding of treated areas should take this into account. For application before or very shortly after emergence the

granular and emulsifiable formulations have given equally good results; for later use the granular formulation is less effective. The acute oral LD 50 varies from 210 mg/kg for guinea pigs to >2 g for chicks; however, Zytron has proved very effective against ants. - L.K. [O.W.]

659. MARCHAL, J. Sering. Onkruidbestrijding. [Weed control in lilacs.] Jversl. Proefst.Bloem.Aalsmeer, 1958,100.
Weeds in the seedling stage were most successfully controlled by simazine, but larger weeds (1 cm high) were best controlled by PCP-oil. Results with a flame gun were unsatisfactory because of the high proportion of grass. - Hort.Abstr., 30,559.

660. KUNZE, H.D. Arbeitserleichterung durch chemische Unkrautbekämpfung bei Maiblumen. [Reducing labour by chemical weed control in lilies-of-the-valley.] Gartenwelt, 1959, 59,256-7, figs.
From the results of a small-scale experiment the following chlorpropham treatment is recommended for lilies-of-the-valley: first spray after planting in the autumn or early spring; second spray after soil cultivation at the end of June or the beginning of July; third spray after soil cultivation and weeding in the middle of October; fourth spray after soil cultivation and weeding in June/July of the second year. The plants did not suffer any injury. - Hort.Abstr., 30,553.

661. BURRELL, A.B. (Peru,N.Y.,U.S.A.) Test with herbicides in Champlain Valley apple orchards. Proc.N.Y.St.hort.Soc., 1959, 104,134-7.
Where soils are acid, dusting sulphur mixed into the soil will eliminate most vegetation round apple trees; no apparent injury is caused to trees so long as less than 20% of the root area is acidified. The treatment takes about 3 years to become effective and requires to be renewed every 3-5 years.
Amitrol 1-4 # applied 3 times annually controlled grass growth round mature trees enough to reduce mouse injury but failed to control vigorous sod round young trees. No tree injury occurred even where trunk and basal sprouts were soaked except for local leaf injury on these sprouts.
Amitrol ca. 10 # and dalapon ca. 17 # applied once to vigorous grass (mainly quack [Agropyron repens] and bluegrass [Poa pratensis])about 8-12 in. high after mowing gave good but not complete grass control when applied from June to early August except of grasses already flowering, but late August spraying was less effective. Dalapon was slower but slightly more effective than amitrol. Rain immediately after spraying reduced the effect of amitrol. Slight injury to 5 or 6 out of ca. 200 young trees was noted from amitrol applied on August 1st and some probable injury to a few weak trees 1 and 2 years old from dalapon. - D.M.L.S. [125(74.7)]

662. LIEBSTER, G. CMV-Schäden an Apfelbäumen. [CMV injuries to apple trees.] ErwObstb., 1959, 1,134, figs.
The leaf spots described and illustrated resembled apple mosaic, but the symptoms disappeared in the following year. - Hort.Abstr., 30,543.

663. * IMAMALIEV, A. [The chemical defoliation of fruit trees.] Diss.Inst.Fiziol.Rast.AN S.S.S.R., 1959.

664. HOLLOWAY, R.I.C. (East Malling Res.Sta., Maidstone,Kent,England). Couch control under stone fruit. Proc.Dalapon Symposium, 1959, 22-3.
The speaker described the methods of growing cherries and plums in England and expressed the view that there is little need for chemical weed control in cherries which are not harmed by tall grasses growing close to the trunks. As it is possible to mow close to the trees, couch [Agropyron repens] rarely becomes established. In plums there may be some scope but only if achieved at very low cost; some form of persistent total weedkiller would seem to be of most value. In 1 trial dalapon 5 and 7 # applied round the base of 10 year old apple trees in July caused some peripheral leaf necrosis and appeared to affect blossom production.
In another trial where dalapon was applied to the base of Cox growing on 2 different rootstocks, trees on Malling II were not affected whereas those on Malling I (which has a higher proportion of its roots close to the trunk and to the surface) showed injury.
In the discussion, it was stated that young apple trees had been injured by dalapon 3 and 7 # applied 1 year after planting but rates up to 10 # had caused no injury to healthy trees over 5 years old. Well established trees had been injured by 15 and 22 # but only temporarily. Both Malling I and Malling XIII

rootstocks had been treated successfully in N. Ireland. Pears were apparently relatively resistant to dalapon. - D.M.L.S. [O.W.]

665. DAY, B.E. and McCARTY, C.D. Weed control methods for use in avocado culture. Yearb.Calif.Avoc.Soc., 1959, 43,75-8, figs.
The advantages and disadvantages of weed control in avocado orchards by mowing, tillage and herbicides are discussed, and methods used for the control of perennial grasses, perennial broad-leaved weeds and annual weeds are outlined. As herbicides, weed oils, oil-water emulsions, oils fortified with dinitro or pentachlorophenol, monuron and 2,4-D acid or amine are recommended. Dalapon and amino triazole have also proved very effective, and the triazine compounds have shown promise. In newly planted orchards, covering the ground around the young trees with black plastic greatly aided weed control. - Hort.Abstr., 30,563.

666. ROBINSON, D.W. (Hort.Cent.,Loughgall, Co.Armagh,N.Ireland). The use of dalapon in bush and cane fruits. Proc.Dalapon Symposium, 1959, 19-21.
Poa annua may usually be killed at any season by low rates of dalapon; 3.7 % applied in November or December appears to be satisfactory. Couch [Agropyron repens] has been successfully controlled in limited trials by 7.4 % (= 1 lb in 10 gal water for spot treatment) sprayed enough to wet the grass without run-off; both spring and autumn applications have usually been necessary; winter applications are not normally successful.
In N. Ireland P. annua is controlled in blackcurrants by a directed spray of 3.7 % applied between September and March; 7.4 % for couch control has caused no injury in several trials. In gooseberries 3.7 or 7.4 % appears satisfactory when applied in autumn or early winter but has caused slight, though only temporary, injury when applied in March and April. Trials with raspberries have produced variable results; though dalapon has been used successfully in spring, late November or December applications appear to be safer, and 3.7 % applied at this time has caused no injury in several trials. There is some evidence of differences in varietal susceptibility, e.g. Malling Jewel is less tolerant than Malling Exploit.
In the discussion Dr. Wood (Scottish Horticultural Research Institute) reported that dalapon had suppressed shoot emergence in Norfolk Giant and Malling Jewel when applied just before sucker emergence. In Scotland, where raspberries are grown on the stool system, the best time for applying herbicides is in February and March after completion of winter cultivations and tying of canes. Hand hoeing to remove surplus suckers is necessary even where herbicides are applied. No injury has been caused to Malling Exploit by dalapon 20 % applied in November.
Mr. Roach (East Malling Research Station) and Mr. Robinson had found overall sprays of dalapon on blackcurrants safe in the dormant season, but late March and April treatments had caused injury. - D.M.L.S. [O.W.]

667. van OORSCHOT, J.L.P. and van STAALDUINE, D. The use of herbicides in strawberries. Typewritten Rep.Biol.Scheik. Onderz., 1959, pp.2.
1. Application during the first year after planting. Chlorpropham 2 kg/ha and simazine 0.5-0.75 kg/ha appear to be injurious if applied before or just after planting; when applied in the spring on soils with a high humus content in such varieties as Jucunda, Senga sengana and Macherauchs Frühernte simazine 0.5-0.75 kg/ha caused no damage and chlorpropham 2 kg/ha only slight damage except to Deutsch Evern which was severely injured and its yield reduced. Good results were obtained with simazine 0.5-0.75 kg/ha and neburon 1.5 kg/ha applied at the beginning of runner formation (June-July) in vars. Jucunda (spring planting), Juspa, Talisman, Ydun, Macherauchs Frühernte (August planting); Deutsch Evern appeared, again, to be more susceptible. Propham 5 kg/ha and chlorpropham 2 kg/ha caused reduction of runner growth and of daughter plants.
2. Application in old strawberry fields. PCP 10% in oil at 30 l/ha or DNOC 4 kg/ha applied after harvest after removal of old strawberry leaves by mowing kills the remaining weeds without injuring the strawberry plants, but this method favours germination of new weeds and is not recommended from a weed control viewpoint. As residual weedkillers, chlorpropham is less suitable than simazine owing to the high summer temperatures and its bad control of Senecio vulgaris. After several years' trials the addition of 2,4-DES to chlorpropham has been abandoned owing to insufficient general weed control, though good results were sometimes obtained. MCPA and 2,4-D 1 kg/ha have given good results in var. Jucunda with summer applications (e.g. in controlling Cirsium arvense). Simazine 0.5-0.75 kg/ha applied in August to very light as well as to heavier soils has been tolerated by vars. Jucunda, Climax, Madame

Moutot, Oberschlesien and Deutsch Evern and generally gives sufficient weed control till spring. Chlorpropham 2 kg/ha or propham 5 kg/ha can be used in the autumn to control chickweed [Stellaria media]. Results with chlorpropham and simazine applied February-April have been inconsistent on both light and heavy soils, yields (the varieties are named) being sometimes reduced and sometimes not. DNOC 4 kg/ha applied before regrowth in March gave good results with Jucunda but appeared dangerous with Climax and Madame Moutot. - D.M.L.S. [194(492)]

668. BUSTAMANTE, B.N.A. Efectividad de seis herbicidas en el combate de malezas en cana de azucar. [The effect of six herbicides on weeds in sugar cane.] Acta agron.Colombia, 1958, 8,(3),125-41, (Span. span.e.), tabs.6,bibl.31.

The literature (31 references) is briefly reviewed. In trials in Colombia the following were applied, rates are in kg/ha (a) pre-em. 8 days after sowing: 2,4-D 1.56 and 1.95, MCPA 1.2 and 2, PCP ca. 24 and 32, TCA 22.5 and 36, monuron 4 and 5.6, dinoseb 13.25 and 15.9, and PCP/2,4-D mixture ca. 2.8 + 1.365 and ca. 3.6 + 1.755; and (b) post-em. 30 days after sowing (avoiding spraying sugar cane leaves and crowns):- 2,4-D 0.975 and 1.365, MCPA 6 and 8, PCP ca. 12 and 20, TCA 9 and 22.5, monuron 20 and ?, dinoseb 7.95 and 10.6, and PCP/2,4-D mixture ca. 1.2 + 0.585 and ca. 1.6 + 0.975.

With all compounds, the pre-em. treatments gave better weed control than the post-em. and sugar cane establishment and tillering were higher from the pre-em. plots. The best pre-em. results were obtained with dinoseb 13.25 and 2,4-D 1.95. Monuron and the PCP/2,4-D mixture also gave good results; PCP alone was slightly less effective, and TCA and MCPA the least effective. Counts for 10 of the most important weeds are recorded. No connection was found between the incidence of Diatrea infestation and herbicide application. - D.M.L.S. [C.A.]

669. COX, J.R. (Chesterford Park Res. Sta.,Saffron Walden,England). Weed control in sugar cane in the West Indies. World Crops, 1959, 11,(12),434-6, figs.2.

Reports that sugar cane can tolerate 10 # simazine. On ratoon fields trash must be burned or removed to allow application to the soil. Work with radioactive simazine has shown that it is broken down in the plants. - L.K. [O.RE.]

670. DURSCHEL, P. (Inst.Waldbautechnik, Göttingen,Germany). Untersuchungen uber die chemische Unkrautbekämpfung in Forstbaumschulen. [Investigations on chemical weed control in forest nurseries.] Mitt.biol. ZentAnst.Berl., 1959, (97),139-43, (G.), tabs.4.

Neburon 2-6 kg/ha and simazine 0.25-1 kg/ha applied 4-6 weeks after sowing spruce, Scots pine or Douglas fir on a humus-rich and a humus-poor soil were injurious. Late autumn applications of neburon 4 and 8 kg/ha and simazine 1 and 2 kg/ha to older spruce and larch caused no injury. In only 2 of 14 trials on spruce (newly transplanted - 3 years old) was any injury caused by simazine; in none was neburon harmful. 3 year old Douglas fir were unaffected by neburon 8 kg/ha or simazine 4 kg/ha; while newly transplanted seedlings were injured by neburon 4 kg/ha (but not by simazine 1 kg/ha). May applications of neburon 5 kg/ha to 3 year old fir caused only temporary injury. Larch treated with neburon 12 kg/ha or simazine 4 kg/ha immediately after transplanting was not affected. - L.K. [O.W.]

671. FABER, H. (PflSchAmt,Rellingen, Schleswig-Holstein,Germany). Unkrautbekämpfung in Ziergehölzquartieren und Baumschulsaatbeeten. [Weed control in woody ornamental nurseries and seedbeds.] Mitt.biol.ZentAnst. Berl., 1959, (97),144-8, (G.), tabs.2.

Four days after transplanting, applications of chlorpropham 5 and 7 kg/ha (1), simazine 0.5 and 1.5 kg/ha (2), neburon 4 kg/ha (3) and mixtures of urea derivatives and carbamic acid esters (4) were made to: Ailanthus glandulosa, Amorpha fruticosa, Berberis thunbergii (injury by (1)), Caragana arborescens, Chaenomeles japonica, C. lageneria, Cornus alba (injury from (1) and (4)), C. mas (injury from (1) and (4)), Elaeagnus angustifolia, Fraxinus aurea (injury from (1)), Hippophae rhamnoides, Potentilla fruticosa, Prunus padus, Rhamnus cathartica (injury from (1)), R. frangula (injury from (1)), Rosa rugosa (injury from (1)), Symphoriocarpus racemosa (injury from (1)). (There was little or no injury unless otherwise stated). Good control of Urtica [dioica] was given by 1, 3 and 4, of Galinsoga [parviflora] by 2, 3 and 4, of Gnaphalium sp. by 2, 3 and 4, and of Poa annua by 1, 2 and 3. In pre-em. trials chlorpropham, simazine and the mixture were applied - Laburnum and Robinia were killed,

and Pinus was severely injured by simazine and chlorpropham. Pinus, Picea, Ulmus and Sambucus treated with neburon or the mixture at emergence were injured; Pinus and Picea which germinated later developed well. - L.K. [O.W.]

Noted

672N. GREAT BRITAIN. Chemical weed control in onions and leeks. Adv.Leafl.Min.Agric. Fish.Fd, 1959, 477,pp.5. [O.W.]

673N. ORTH, H. Untersuchungen über Anwendung von Herbiziden im Gemüsebau. [Studies on the application of herbicides in vegetable crops.] Wiss.Z.Univ.Halle, Math.-Nat., 1958, 8,52-3.
An abridged review.

BIOLOGY OF WEEDS AND POISONING BY WEEDS

674. CHANCELLOR, R.J. (Univ.Dep.Agric., Oxford,England). Identification of seedlings of common weeds. Bull.Min.Agric.Fish.Fd, 1959, 179,pp.72, figs.87,bibl.7.
The seedlings are arranged in 14 groups to which a key is provided and illustrations given of seedlings of 87 British species. - D.M.L.S. [W26(42)]

675. GYSEL, A. Uber den Einfluss des Bodens, der Bodenbearbeitung und der Deckfrucht auf das Vorkommen und die Keimung des Ackersenfs. [The effect of soil, cultivation and crop on the occurrence and germination of charlock.] Schweiz.landw.Mh., 1959, 4/5, 228-33, (G.)
Sinapis arvensis prefers moist soils of alkaline reaction and does not usually occur on soils of pH 4.3-5. Cultivation promotes weed infestation when done at the time of germination of charlock (usually March-April), but provides an efficient control if undertaken later. The weed associates preferably with spring cereals and early root crops and when it occurs in winter cereals it is more numerous under wheat than under rye or barley. - Soils & Fert., 23,348.

676. POLENOV, L.V. [The germination of some weeds at different temperatures and low humidity.] Ukr.Bot.Zh., 1958, 15,(2), 44-56, (Ukrainian.russ.e.), bibl.34.
By field observations and laboratory experiments a study was made of the conditions of humidity and temperature necessary for the germination of weed seeds of various biological groups in the Steppe zone of the U.S.S.R. - Ref.Zh.Biol., 1960, 6103.

677. PONOMAREV, L.P. [The problem of the infestation of oats with wild oats in the Altai region.] Bull.Nauchno-Tekh. Altaisk.Zon.Inst.Selsk., 1958, (2),18-25, (Russ.)
Experiments carried out at the Altai Agricultural Institute in 1952 showed the great number of intermediate forms between oats and wild oats [Avena fatua] and the variability of oats. All the intermediate forms in later generations gave oats and wild oats. The author explains this phenomenon and how the oat-wild oat hybrids divide and how oats degenerate into wild oats. - Ref.Zh.Biol., 1960, 15301.

678. JALAS, J. and JUUSELA, T. Unkrautstudien und Bodenuntersuchungen auf den Grundwasserstandparzellen des wasserwirtschaftlichen Versuchsfeldes Maasoya in Vihti, Südfinaland. [Studies of weeds and investigations of soils on plots with high ground water on the hydrological experimental field at Maasoja in Vihti, southern Finland.] Ann.bot.Soc.zool.-bot. fenn.Vanamo, 1959, 30,(5),pp.61, (G. finnish), bibl.59.
The distribution of weeds according to soil type (peat and silty clay), groundwater level, crop and rotation is discussed. Data are given on the moisture content, texture, volume weight, humus level and pH of the two soils covering the area. 59 references. - Soils & Fert., 23,345.

679. * GOLD, T.M. [Further information on the occurrence of dodder in the environs of Odessa.] Ukr.Bot.Zh., 1959, 16,(2), 80-2, (Ukrainian).
Cuscuta sp.

680. TSELINOVA, L.A. [American dodder (Cuscuta campestris luncker) and its chemical control.] Trud.Voronezh.Univ., 1958, 45,(3),69-72, (Russ.)
Reports for the first time the occurrence of C. campestris in the Voronezh region

as a parasite on potatoes, sugar beet and curcurbits. The most important host appears to be dupnishnik kolyuchii [Xanthium spinosum]. Chemical control by 2,4-D was ineffective. - Ref.Zh.Biol., 1960, 10655.

681. AVERY, A.G., SATINA, S. and RIETSEMA, J. Blakeslee: the genus Datura. Ronald Press Co.,New York, 1959, $8.75, pp.xli + 289, figs.67,tabs.34.
This book consists of studies concerned with the genetics, evolution and taxonomy of the genus Datura by various authors. - Plant Breed.Abstr., 30,(1),933.

682. BELL, C.R. and CONSTANCE, L. (Univ., Chapel Hill.,N.Carolina,U.S.A.) Chromosome numbers in Umbelliferae. II. Amer.J.Bot., 1960, 47,(1),24-32, figs.100,tabs.1,bibl.4.
Gives drawings and counts of the chromosomes (numbers given as n) of 100 taxa of the Umbelliferae including: Carum carvi 10 and Cicuta douglasii 11. - L.K. [O.W.]

683. de WET, J.M.J. (Div.Bot.,Pretoria, S.Africa). Chromosome numbers and some morphological attributes of various South African grasses. Amer.J.Bot., 1960, 47,(1),44-9, figs.47,tabs.1,bibl.29.
Gives drawings and counts of the chromosomes (numbers given as 2n) of 68 species including: Eragrostis ciliaris 20, Danthonia arundinacea 12, Aristida spectabilis 22, Cenchrus ciliaris 36 and Pennisetum thunbergii 18. - L.K. [O.W.]

684. MONTGOMERY, F.H. Common weeds of Ontario. Bull.Ont.Dep.Agric., 1959, (Rev.), 505,pp.104.
Contains descriptions of 141 weeds, illustrations of 76, and also enlarged photographs of the seeds of 76 spp. Common and botanical names are given. - D.M.L.S. [W16(71)]

685. PARHAM, J.W. (Dep.Agric.,Suva,Fiji). The weeds of Fiji. Bull.Fiji Dep.Agric., 1958, 35,pp.196, figs.98,bibl.44.
About 250 weeds are described and 98 illustrated by line drawings. Notes on the distribution of most of the individual weeds are included also an account of the effect of the climate and physical characteristics of the islands on general weed distribution. The weeds are classified, a key provided, and declared noxious weeds distinguished. - D.M.L.S. [W1(961)]

686. * RYCHIN, Yu. V. [Weeds. A key for the central European part of the U.S.S.R.] Uchpedgiz, 1959, pp.291. figs.

687. * BRITTON, J.W. Working with wildlife. Farm Chem.Handbk, 1959, 122,(10),40-1.
Use of herbicides in weed control. - J.W.B.

688. MONTGOMERY, F.H., HENDERSON, J.A. and BIBBEY, R.O. (Ontario Agric.Coll.,Toronto, Canada). Plants poisonous to livestock in Ontario. Bull.Ont.Dep.Agric., 1956, 508, figs.28,bibl.12.
Includes descriptions with illustrations of the following plants (with symptoms of poisoning and treatment):- Agrostemma githago, Apocynum androsaemifolium, Apocynum cannabinum, Asclepias verticillata, Caltha palustris, Cenchrus spp., Cicuta maculata, Dicentra canadensis, D. cucullaria, Eupatorium rugosum, Euphorbia cyparissias, Euphorbia esula, Helenium autumnale, Hypericum perforatum, Kalmia spp., Linum usitatissimum, Lobelia inflata, Lupinus perennis, Melilotus spp., Phytolacca americana, Prunus pensylvanica, Prunus serotina, Ranunculus abortivus, R. acris, Saponaria officinalis, S. vaccaria and Sium suave. - D.M.L.S. [W17(71)]

689. SHONE, D.K. (Vet.Res.Lab.,Salisbury, S. Rhodesia). Lantana poisoning of cattle. Rhod.agric.J., 1959, 56,(6),238-9.
Small quantities of Lantana camara eaten daily over a long period will have no adverse effects, whereas the same quantity eaten in a few days would be fatal. Frosting has been reported to increase toxicity. An outbreak after severe frosts is reported in which 9 cows died and 2 aborted. The symptoms and treatment are described. - D.M.L.S. [O.RE.]

690. ZELJKO, M. and KARLOVIC, M. Trovanje svinja kokotoem (Melilotus officinalis Desrousseaux). [Sweet clover (M. officinalis) poisoning in pigs.] Vet.Glasn., 1959, 13, 61-3, (Croatian.e.)
Five of 12 sows died after ingestion of M. officinalis. The remainder recovered after treatment with vitamin K. - Vet.Bull.,Weybridge, 29,(10),3273.

691. DODSON, M.E. Oxalate ingestion studies in the sheep. Aust.vet.J., 1959, 35,225-33.
Grazing experiments with sheep on Oxalis cernua, which has an oxalate content of about 12%, demonstrated that sheep may consume a daily average of 750 g (dry weight) of the

plant. The possible reasons for the failure of some sheep to tolerate oxalates are discussed. About 1% of 1200 sheep run at Roseworthy Agricultural College are lost from oxalate poisoning. - Vet.Bull.,Weybridge, 29,(12),3965.

692. KNOTT, S.G. and McCRAY, C.W.R. Two naturally occurring outbreaks of selenosis in Queensland. Aust.vet.J., 1959, 35,161-5.
Chronic selenosis recorded in Cape York Peninsula is associated with Morinda reticulata growing on soils of low selenium content. Acute selenosis recorded in the Richmond district is restricted to a small area where the soil has a high selenium content and all vegetation shows appreciable levels of selenium, Neptunia amplexicaulis having an extremely high concentration. M. reticulata and N. amplexicaulis are major accumulating plants, the first of this type reported outside the U.S.A. The symptoms of toxicity are described. - From Vet.Bull., Weybridge, 29,(12),3956. - D.M.L.S.

693. LUSTIG, M. [Greek hay straw - a possible toxic factor for cattle.] Refuah vet., 1958, 15,171-2, (Hebrew.e.)
Chronic lameness in 24 calves which started in the hind legs and spread to the fore limbs within 4-6 weeks is described. On all affected farms the cattle had each been given 2-4 kg daily of "Greek hay" straw, which is stated to be a legume [? fenngeek ], for 2 months before the onset of lameness. The condition did not respond to tocopherol therapy. - From Vet.Bull.,Weybridge, 29,(10),3272. - D.M.L.S.

694. SLEZIC, M. Vergiftungen der Haustiere durch die Pflanzengattung Gemsekraut-Doronicum. [Poisoning of livestock by plants of the genus Doronicum.] Proc.16th Int.vet.Congr.,Madrid, 1959, 97-8.
In feeding trials the minimum lethal dose of D. caucasium for cattle was found to be 0.5 g of dry leaves/kg body weight, for horses 0.75 g, and for sheep 0.1 g. Cattle died 12-38 hours after eating, horses 18-40 hours, and sheep 12-16 hours. D. austriacum was less toxic and death took place 6-10 hours later. Fowls were unaffected even by 10 times the lethal dose for cattle. Symptoms and post mortem findings are described. - From Vet.Bull., Weybridge, 29,(10), 3274. - D.M.L.S.

## AQUATIC AND WOODY WEEDS AND THEIR CONTROL

See also 712,713,767.

695. SVETASHOV, A.T. [Reeds on arable soils of Dagestan and methods of controlling them.] Bull.Nauchno-Tekh.Inf. Dagestan. Inst.Selsk., 1958, (2), 10-14, (Russ.)
Investigations on different soils in Dagestan showed that the main rhizome mass of Trostnik [Phragmites communis] which was harmful to tilled land, occurred in the 0-60 cm layer. The greatest amount of rhizomes were found in marshy pastures and the least in steppe pastures. Mouldboardless ploughing by the Maltsev method to a depth of 50 cm in the steppe pastures gave better control than the usual ploughing to a depth of 22 cm. - Ref.Zh.Biol., 1960, 6111.

696. CHANCELLOR, R.J. and RIPPER, W.E. (A.R.C.Unit exptl Agron.,Univ.Oxford, England). Control of reeds and other emergent water weeds in drainage ditches, ponds and watercourses. The effects of dalapon on fish. Proc.Dalapon Symposium, 1959, 26-9.
Dalapon 20-40 # in 100 gal + wetting agent 0.25-0.5% controlled Carex riparia, C. elata, Iris pseudacorus, Phragmites communis, Sparganium ramosum, Typha latifolia and T. angustifolia. Species resistant to dalapon were Alisma plantago-aquatica, A. lanceolata and Sagittaria sagittifolia (all readily controlled by 2,4-D and 2,4,5-T esters), Schoenoplectus lacustris (controlled by 2,4,5-TP) and Lythrum salicaria (controlled by 2,4-D). In toxicity tests using the commercial formulation of dalapon, yellow perch, northern fathead minnow, pumpkin seed and brown trout tolerated 300 p.p.m.; 50% trout were killed by 400 p.p.m.; insects eaten by fish were unaffected by 400-800 p.p.m., and dragon-fly nymphs were not killed by 2000 p.p.m. Dalapon (sodium salt) 3000 p.p.m. did not affect the fish Lake Emerald Shiner. - M.E.L. [O.W.]

697. BANK, O. Stickstoffdüngermittel zur Bekämpfung unerwünschten Pflanzenwuchses. [Nitrogenous fertilisers for the control of unwanted plant growth.] Fischbauer, 1958, 9,(117),473-5, (G.)

Fertilisers are useful immediately after draining ponds. Experiments showed that basic slag promoted growth of algae. Nitrogenous fertilisers at 250 kg/ha (N) killed Elodea after some weeks. - Ref. Zh.Biol., 1960, 6106.

698. CARVELL, K.L. (For.Div.,Univ.W. Virginia,U.S.A.) Comparison of Veon 245 and Esteron 245 for killing cull oaks. Down to Earth, 1959, 15,(3),14-15, figs.1, tabs.2.

The % kill of Quercus alba 6-20 in. d.b.h., 1 year after June frilling or hacking at intervals of 1, 2 or 4 in., plus applications of undiluted 2,4,5-T (triethylamine salt, Veon 245) or 2,4,5-T (propylene glycol butyl ether ester, Esteron 245) in a water carrier showed:- (a) in all diameter classes, % kill for amine > ester formulations, (b) both the decrease in % kill with increase in distance between hacks and with the increase in diameter of the trees for amine < ester formulation, (c) with trees of < 12 in. d.b.h. a complete frill is unnecessary whereas for trees > 16 in. d.b.h. it is necessary. - M.E.L. [O.W.]

699. GIBBS, C.B. (Southern For.Exp.Sta., U.S.Dep.Agric.,East Texas,U.S.A.) Amines of 2,4-D hold promise for hardwood control. Down to Earth, 1959, 15,(3),6, tabs.1, bibl.5.

In preliminary experiments in March, 1957, 2,4-D (amine) 400 lb/100 gal was applied to notches 3 in. apart of Quercus stellata and Liquidambar styraciflua 0.6-3.5 in. d.b.h. Dosage of 0.5 ml/notch killed 96% Quercus and 81% Liquidambar during 1958. 2 ml/cut top-killed 99% Quercus and 100% Liquidambar during 1958. During the second growing season sprouting occurred on 25% Liquidambar stems treated with 0.5 ml and on 7% stems treated with 2 ml. None of the Quercus sprouted. The cost of 2,4-D (amine) would be no more than 2,4,5-T (ester) and the smaller volumes used would be more convenient in an injector. - M.E.L. [O.W.]

700. BOYER, M.G. (Te Awamutu,New Zealand). Spraying blackberry. N.Z.J.Agric., 1959, 99,(6),521.

The best time to spray blackberry [Rubus fruticosus] is in summer and early autumn when plants are in full leaf with the second year canes fruiting or past fruiting. 3 or 4 applications of 2,4,5-T concentrate 1 gal/ac in 160 gal water are recommended to give complete kill. Large infestations on tractor country should be crushed, burnt and regrassed. Top dressing and stocking will give some control of regrowth and any uncontrolled can then be mown or sprayed. - D.M.L.S. [O.RE.]

701. McCULLY, W.G., HOFFMAN, G.O. and JETER, B.E. (Dep.Range For.,Coll.Sta.,Texas, U.S.A.) Possibility of controlling Macartney rose. Progr.Rep.Texas agric.Exp.Sta., 1959, 2093, pp.4, figs.7,bibl.5.

A review of experimental work on the control of Rosa bracteata. Trials to date indicate that 2,3,6-TBA is no more effective than 2,4-D on sprouts from mown plants, but has been effective at 4 lb/100 gal spray on unmown growth. Fenuron pellets at rates up to 9 % were ineffectual against sprouts. One application of 2,4-D 4 % will kill seedlings and very young plants but older plants require several applications a year and for sprouts from mown plants intensive treatment over several years is apparently necessary. - D.M.L.S. [127(76.4)]

702. TEKPER, W. Lantana. A menacing shrub to farmers. Ghana Fmr, 1959, 3,(4),128-9.

As a result of a survey conducted by the the Department of Agriculture in 1941 to determine whether any action was necessary in regard to the spread of Lantana nivea in the Akwapim District, it was concluded that the conditions of shifting cultivation prevailing in the area would make eradication almost impracticable and that cleared land must be put into immediate use including the establishment of a firewood plantation. The situation was not considered to be as serious as had been contended and no action was taken. - D.M.L.S. [O.RE.]

703. REYNOLDS, H.G. (Rocky Mountain For. Exp.Sta.,Tempe,Arizona,U.S.A.) Brush control in the Southwest. Amer.Ass.Advancement Sci.Grasslands Symposium, 1959, 379-89, figs.4,bibl.13.

The principal woody weeds in Arizona and New Mexico are named and their habitat, the causes of their invasion, and control methods briefly discussed. - D.M.L.S. [18(79.1)]

See also 634,635,640,643,645,646,656,658,661,666,671,695, 741,767.

704. CORNS, W.G. (Dep.Plant Sci.,Univ. Alberta,Edmonton,Canada). Chemical control of couch grass with TCA. Circ.Dep.Ext.Univ. Alberta, 1960, W-C-31.

A brief instruction leaflet on the use of TCA against Agropyron repens prior to lawn preparation. - M.E.L. [219(71)]

705. SOUTHWICK, L. (Dow Chem.Co.,Midland, Michigan,U.S.A.) Control of couch in potatoes, sugar beet, turnips, rhubarb and asparagus. Proc.Dalapon Symposium, 1959, 13-14.

The main method of controlling couch grass [Agropyron repens] with dalapon in potatoes, sugar beet, turnips, rhubarb and asparagus is by pre-planting treatments. For crops planted on land infested with couch, the following treatments with dalapon were also recommended:- potatoes - 4-7.5 # when grass emerges just before the crop; sugar beet - 5 # post-em., slight temporary crop retardation but no yield reduction occurs; rhubarb - 10 # sprayed in spring and autumn but avoiding the foliage; asparagus - 7.5 # applied to base of plants in dormant season, or after a close cut of spears, or sprayed when fern growth is mature in the autumn. Results of trials suggest that dalapon might be used for controlling couch in kale. In normal moist spring conditions, dalapon 5 # did not affect the germination of Italian ryegrass planted 1 week later. In a dry spring, ryegrass growth was severely affected 1 month after spraying with dalapon 10 #. - M.E.L. [O.W.]

706. CAMPBELL, M.B. (Dep.Agric.,Sydney, N.S.W., Australia). Only well-managed sown pastures provide permanent tussock control. Agric.Gaz.N.S.W., 1960, 71,(1),9-19, figs. 12,bibl.9.

The control of Nassella trichotoma by means of pasture oversowing + management is fully reviewed and information derived from 22 trials laid down in New South Wales between 1954-8 included. The following factors are discussed:- burning before ploughing; the best type of plough for cultivation; cropping before sowing pasture species; oats as a cover crop; fallowing; pasture spelling; clover species; Phalaris tuberosa, and rye grasses as pasture species; control of reinfestation by chipping; the necessity for rabbit eradication; soil fertility. - D.M.L.S. [O.W.]

707. SOUTHWICK, L. (Dow Chem.Co.,Midland, Michigan,U.S.A.) Control of perennial grasses on the stubble and by pre-planting treatments. Proc.Dalapon Symposium, 1959, 4-7.

In U.S.A., the recommended methods for couch [Agropyron repens] control by dalapon are (a) 6-7.5 # in spring followed by ploughing 2 weeks later. Four weeks should elapse after spraying before planting. Rainfall after spraying improves the kill; or (b) 7.5-12 # in autumn plus ploughing. For the control of Sorghum halepense 2 or 3 applications of dalapon 5 # were more effective than one application 35-40 #. - M.E.L. [O.W.]

708. UNITED STATES. Results of research in 1957 by the Agricultural Experiment Station of the University of Kentucky. Rep. Direct.Ky agric.Exp.Sta., 1957, 70,pp.90.

p.8. Johnson grass [Sorghum halepense] growing from rootstocks were reduced 99% by 3 foliage applications of dalapon (sodium) 3.7 # a.e. made 1 week apart and beginning in late August, the land was ploughed after the final treatment. Wheat planted 3 weeks after ploughing showed no phytotoxic effects.

In tobacco beds, 85% control of weeds was achieved by autumn-drench treatments of the soil with Mylone 85-W [DMTT] 326.7 #. 90% control was obtained when treatment was made in spring, 3 weeks before seeding on autumn-worked beds, although the same treatment on spring-worked beds gave poor control.

p.65. Neburon and simazine gave excellent weed control in Taxus media hicksii and Lonicera fragrantissima for 8 weeks or longer. Two applications of 2,4-DES were necessary for satisfactory control for 8 weeks. Simazine 4 # gave good control in 3 year old sugar maple [Acer saccharum] liners for 8 months. No injury to the nursery stock was observed with any treatment.

Kuron [2,4,5-TP], Novan [erbon?], amitrol and AMS all gave excellent control of wild cane (Arundinaria gigantea).

A sawdust mulch proved to be a better insulator for red raspberries than either ground corncobs or straw, and gave a better yield than either these or the cultivated control plot. - J.W.B. [O.W.]

709. SEIFFERT, M. and BECKER, H.G. (Inst. Ackerbau,Univ.,Rostock,Germany). Die Verbreitung des Ackerruchgrases (Anthoxantum aristatum Boiss.) und die Möglichkeiten seiner Bekämpfung. [The distribution of Anthoxanthum aristatum Boiss. and possibilities of controlling it.] Dtsch.Landw.Berl., 1960, 11,(1),29-32, (G.), figs.1,tabs.3, bibl.5.

Anthoxanthum aristatum [A. puelii] is primarily a weed of poor soils. The seed has no dormancy and germinates mainly in the autumn and spring and frequently infests rye. Investigation of the phosphorous and potassium content of 9 soils showed no obvious correlation with degree of infestation, there was, however, a suggestion that it was favoured by low soil pH. On average, plants form 200-300 viable seeds which mature at the end of June or in July. Control is best achieved by a rotation in which rye is separated by at least one other crop, by delaying the sowing of rye to allow of cultivations or by applying calcium cyanamide 150-300 kg/ha. November application of 150 kg/ha of cyanamide gave better results than even the highest rate in December, January, February, March, April or split applications. As well as destroying 80-90% of the weed, cyanamide weakens the rest and promotes the growth of rye thus permitting harrowing in the spring. - L.K. [O.W.]

710. SPRINGENSGUTH, W. (PflSch.Amt., Westfalen-Lippe,Germany). Untersuchungen über die Anwendung von Kalkstickstoff und Kalidüngemitteln zur Bekämpfung des Ackerfuchsschwanzes. [Investigations on the application of calcium cyanamide and potassium fertilisers for the control of blackgrass.] Z.Acker.u.PflBau, 1960, 110, (1),69-81, (G.e.), tabs.3,bibl.2.

Preliminary experiments in which calcium cyanamide + potassium fertiliser was applied: (1) 7 days before sowing winter wheat, (2) at the time of sowing, (3) at germination or (4) at emergence, showed that the most promising times for controlling blackgrass [Alopecurus myosuroides] were (2) and (4) but (2) caused some crop injury. In several field trials calcium cyanamide was therefore applied (a) at crop emergence or (b) in early spring or (c) on both dates, when the second application was fortified with a potassium fertiliser. (c) generally gave the best results but there was considerable variation between experiments. The 40% potash salt used was not injurious to either crop or soil structure, whereas Kainite or Sylvinite were. To be effective on blackgrass, calcium cyanamide must be used before the 3-leaf stage and, therefore, the 2 treatments are necessary to control autumn and spring germinators; however, even where the treatments are not completely successful, the rates of chemicals used (cyanamide 40 kg/ha N equivalent and potash 80 kg/ha $K_2O$) are not considered wasteful. Harrowing about a month after the spring treatment fairly consistently improved the results. - L.K. [O.W.]

711. SAKYKOV, I. [How to fight the southern wild oat in winter wheat crops.] Sotsiol.Sel'Skoe Khoziaist.Azerbaydzhana, 1956, 12,31-2.

Winter wheat choking after various preceding crops was studied. The number of weeds/$m^2$ prior to the harvest of wheat was: on fallow land, 17; on vegetable-melon land, 49; winter wheat, 96; permanent wheat, 205. Particularly important is choking by the wild oat [Avena fatua]. An effective method of fighting the wild oat under the conditions prevalent in Khudatskiy region of the Azerbaydzhan SSR is the use of black fallow land with irrigation. After the mass appearance of young growths of wild oat, preharvest treatment with the surface plough 10 cm deep is effected and then followed by harrowing. - Biol.Abstr.,Plant Sciences, 35,8552.

712. FROHNER, W. (Ost.Stickstoffwerke, Linz,Austria). Die Unkrautbekämpfung auf Almen. [Weed control on mountain pastures.] Mitt.biol.ZentAnst.Berl., 1959, (97),136-9, (G.)

Rumex alpinus may be killed by 2,4-D + TCA. The mixture should be applied shortly before flowering, and regrowth mown the same year if necessary; the following year the same herbicidal treatment should be used and weather permitting the land can be re-sown 10-12 weeks later. Later management must prevent re-establishment from seed. Rhododendron ferrugineum may be controlled by 2,4,5-T 2-5 kg/ha. For the control of Vaccinium myrtillus 2,4,5-T (ester) shortly before flowering is recommended; if the spraying is successful it should be followed by liming and general fertilising - Calluna vulgaris should be similarly treated. Excellent control of Veratrum album has been obtained by spot treating with 2,4-D + TCA. Senecio alpinus is susceptible to growth regulators at 4-8 kg/ha. - L.K. [O.W.]

713. UNITED STATES. Handbook. Chemical control of range weeds. U.S.Dep.Agric.,

Dep.Int.,Range Seed.Equip.Comm., 1959, (rev.), pp.94.
Recommendations are given for the following: (a) grasses - Bromus tectorum, Hordeum jubatum, Elymus caput-medusae; (b) forbs - Hymenoxys odorata, Zygadenus venenosus, Veratrum californicum, Halogeton glomeratus, Centaurea picris, Delphinium megacarpum, Astragalus sp., Oxytropis sp., Lupinus sp., Wyethia amplexicaulis, Ranunculus alismaefolius, Gutierrezia sarothrae, Helenium hoopesii, Euphorbia esula, Hypericum perforatum, Senecio jacobaea, Madia glomerata, Cirsium arvense, Cardaria draba Iris missouriensis; (c) woody plants - Adenostoma fasciculatum, Opuntia spp., Ilex glabra, Sarcobatus vermiculatus, Juniperus spp., Arctostaphylos spp., Prosopis juliflora, Quercus douglasii, Q. stellata, Q. turbinella, Q. havardii, Hymenoxys richardsoni, Opuntia platyopuntia, Chrysothamnus viscidiflorus, Salvia aethiopes, Artemisia tridentata, A. cana, A. frigida, Tamarix pentandra, Serenoa repens, Salix spp. - D.M.L.S. [W27(73)]

714. * DODD, A.P. The biological control of prickly pear in Australia. Monog.Biol., 1959, 8,565-77.
[Opuntia spp.]

715. TOSIC, L. Dejstvo nekih hemiskih preparata na Orobanche ramosa. [The effect of certain chemicals on Orobanche ramosa.] Zasht.Bilja, 1959, 47/48,231-4, bibl.5.
The effective control agents PCP, chlorpropham, dinoseb, propham and copper sulphate were all phytotoxic to tobacco. - Hort. Abstr., 30,562.

716. * BESS, H.A. and HARAMOTO, F.H. Biological control of Pamakani, Eupatorium adenophorum, in Hawaii by a Tephritid gall fly, Procecidochares utilis. 1. The life history of the fly and its effectiveness in the control of the weed. Proc.10th Int. Congr.Ent., 1958, 4,543-8.

717. BULL, H.McM. (Dep.Agric.,Auckland, New Zealand). Redroot in chou moellier controlled with MCA. N.Z.J.Agric., 1959, 99,(6),573, figs.2.
Redroot [Amaranthus retroflexus] was successfully controlled by sodium monochloroacetate (MCA) 20 # in 20 gal water applied when chou moellier was 18 in. high and the weed even higher. Good results have also been obtained with the crop up to 3 ft high, but spraying must then be done by aircraft or by knapsack sprayer to get good coverage and avoid tractor injury. Complete coverage is essential and spraying when the weed is ahead of the crop is therefore recommended. 15 # is enough when weed and crop are young. Kale, rape and swedes may also be sprayed with MCA.
MCA appears to be palatable and injurious to stock which should therefore be kept off sprayed areas for 4 weeks. - D.M.L.S. [O.RE.]

718. DERSCHEID, L.A. and WALLACE, K.E. (Exp.Sta.,State Coll.,Brookings,S.Dak., U.S.A.) Control and elimination of thistles. Circ.S.Dak.agric.Exp.Sta., 1959, 147,pp.4.
Cirsium arvense and Sonchus arvensis. Recommendations are given for control by cultivation + chemicals (2,4-D, MCPA, amitrol, 2,4-DB),with instructions for use in small grains, summer crops and forage crops, and also for control by soil sterilants. - D.M.L.S. [28(78.3)]

719. DERSCHEID, L.A. and WALLACE, K.E. (Exp.Sta.,State Coll.,Brookings,S.Dak., U.S.A.) Control and elimination of field bindweed(Convolvulus arvensis). Circ. S.Dak.agric.Exp.Sta., 1959, 146,pp.4.
Recommendations are given for control by cultivation + chemicals (2,4-D, 2,3,6-TBA and polychlorobenzoic acid), by grazing, and by soil sterilants. - D.M.L.S. [29(78.3)]

720. * GURSKII, V.E. [Weeds of the fields and methods of weed control in the conditions of the Latvian S.S.R.] Diss.Latv. Selsk.Akad.Riga, 1959.

721. NEWELL, L.C. (Univ.,Nebraska, U.S.A.) A study of some plant characteristics and control of bur ragweed, Franseria tomentosa, Gray. Diss.Abstr., 1959, 20, (5),1504, Microfilm $2.00, pp.79.
Reproduction of this weed takes place by roots and seeds; vertical roots exceed a depth of 6 ft while horizontal roots are found in the upper 10 in. of soil. Germination was poor in laboratory tests as the seeds appear to have a hard seed coat as well as an internal dormancy. New plants developed rapidly from root cuttings in both the greenhouse and field, and once established in the field, clones spread rapidly by horizontal roots, until after 2 years they averaged 31 ft in diameter.

On the basis of 5% moisture total available carbohydrates in the roots averaged 29%; starch alone averaged 20.1%, while sucrose averaged 7.6% and reducing sugars 1.2%. Total carbohydrates of untreated roots declined steadily from emergence to to mid-May, and then increased until August.

Tests on control using 2,4-D showed that July applications were not as effective as June, and treatment in August had no effect. Treatments giving the most consistent reductions in stand were the isopropyl ester 2 and 4 #, the butoxyethanol ester 1 and 2 #, and the amine 4 #. For the best and most economical results, 2,4-D (ester) should be applied at 2 # in June; repeated treatment may be necessary. - J.W.B. [O.F.]

722. RHODESIA. Farming calendar, January. Rhod.agric.J., 1959, 56,(6),231-6, p.235-6. Control of weeds. Good drainage andthe turning of pigs and poultry (which eat the tubers) on to infested land after ploughing are the best methods of reducing Cyperus esculentus. On intensively cultivated soils which yield high returns, it may be economic to fumigate the soil with methyl bromide. - D.M.L.S. [O.RE.]

723. * BOGDANOV, P.L. [Lime as a means of moss control in forest cultures on mossed-over drained swamps and clearings.] Akad.Nauk.SSSR Inst.Lesa.Trudy, 1959, 49,112-20, (Russ.)

Noted

724N. CANADA. Halogeton - intermountain range weed. Leafl.Dep.Agric.Brit.Col., 1952, 18,pp.2, figs.1.

A description and control measures are briefly mentioned. - J.W.B. [226(71)]

725N. CANADA. Couch, quack or scutch grass. Toadflax, Leafy spurge. Hoary Cress, Russian knapweed. Canada thistle, Sowthistle. Leafl.Dep.Agric.Brit.Col., (n.d.), pp.4 (each).

Four leaflets give descriptions, illustrations, and control methods for the following weeds:- Agropyron repens, toadflax [Linaria spp.], leafy spurge [Euphorbia esula], Cardaria spp., Centaurea repens, Cirsium arvense and Sonchus arvensis. - J.W.B. [222-5(71)]

726N. SANTELMANN, P.W. and MEADE, J.A. (Univ.Md,U.S.A.) Control wild garlic in pastures and grains. Agron.Mimeo.Univ.Md,1958, 22, pp.2. [100(75.2)]

## CHEMISTRY, PHYSICS, TOXICOLOGY, RESIDUES AND SOILS

See also 658,696,708,717,741,742.

727. RANDLE, S.B. et al. Pesticides - 1958. Economic Poisons, Inspection Ser.,N.J.agric. Exp.Sta., 1959, 75,pp.31.

Contains the analytical results of official samples collected during 1958 with the manufacturers' names. Compounds analysed were mainly insecticides but samples of disodium methyl arsonate, sodium arsenite, 2,4-D and 2,4,5-T were also included. - D.M.L.S. [52(74.9)]

728. FISCHER, A. (Landw.Versuchsta.,Limburgerhof,Germany). Neue Herbizide zur Unkrautbekämpfung in Rüben - und Gemüse-Kulturen im Vorauflaufverfahren. [New herbicides for pre-em. weed control in beet and vegetable crops.] Laborbericht Badische Anilin u.Soda Fabrik, 1959, 563,pp.15, figs.6,tabs.1.

The solubility of CMU (N-cyclooctyl-N',N'-dimethylurea) in water is 0.015%, in methanol 50%, in ethanol 28.6%, in benzene 4.3%, in acetone 4.2% and in ethyl acetate 2.9%; melting point is 138°C. The compound has virtually no vapour pressure and its LD 50 to rats is 1.5 g/kg. In laboratory tests when applied immediately after sowing 0.8 kg/ha caused no injury to sugar beet, carrots or onions whereas monuron and simazine were both injurious. When oats, beet and mustard were sown on soil treated 8 weeks previously with 1, 2.5 and 5 kg of the 3 compounds, CMU caused only about 10% reduction in fresh weight even at the highest rate while monuron caused > 50% reduction and simazine > 70% reduction at the lowest rate. Weeds susceptible to CMU include Chenopodium album, Atriplex hastata, Raphanus raphanistrum, Matricaria spp., Spergula arvensis, Stellaria media, Urtica urens, Capsella bursa-pastoris and Galinsoga parviflora; resistant species include Polygonum persicaria, Sinapis alba and Rumex acetosa. CMU has also given promising results in peas, beans, spinach and forest nurseries. The solubility of BiPC (butinol-N(3-chlorophenyl) carbamate) in water is 0.054%, in methanol

13.3%, in ethanol 9.5%, in benzene 7.7%, in acetone 28.6% and in ethyl acetate 9.1%; the melting point is 45-46°C and it is highly volatile. The LD 50 to rats is 2.5 g/kg. CMU + BiPC controlled all the weeds controlled by CMU alone and also Polygonum spp. and Rumex acetosa; it gave 50-65% control of Senecio vulgaris and Echinochloa crus-galli and < 40% control of Avena fatua, Lamium spp., Fumaria officinalis, Geranium spp., Vicia spp., Veronica spp. and Mercurialis annua. The mixture caused no injury to sugar beet sown 2 cm but seed shallowly sown did not germinate. No deformities were caused to either sugar beet or carrots. The mixture appears to persist in the soil for a similar period to CMU alone. Four daily application of 1 cm of water removed 82.8% of the applied mixture from a layer of soil 1 cm thick; however, in a greenhouse test beet suffered little injury when simulated rain followed sowing. - L.K.
[BASF]

729. MONEV, G. and MENOV, I. Magnesium chlorate (defoliant for cotton). Khim. i Ind.(Sofia), 1959, 31,(3),66-8.
$Mg(ClO_3)_2$ is prepared by the fusion method by mixing $NaClO_3$ and $MgSO_4.7H_2O$ at 110-15°. The optimum ratio of ingredients is 37.5: 62.5. This yields the highest $Mg(ClO_3)_2$ content, 40.8%. The unpurified fusion mass is used as the defoliant. - Chem.Abstr., 53,20671e.

730. ROBINSON, A.G. (Dep.Entomology, Manitoba Univ.,Winnipeg,Canada). Note on fecundity of the pea aphid, Acyrthosiphon pisum (Harris), caged on plants of broad bean, Vicia faba L., treated with various plant growth regulators. Canad.Ent., 1959, 91,(8),527-8, tabs.1,bibl.3.
MH by root absorption caused both nymphal mortality and reduced fecundity at rates of 4000, 3000 and 2000 p.p.m. No effect on adult or nymphal mortality or on adult fecundity was caused by root absorption of 2,4-D at 2, 1, 0.5 and 0.01 p.p.m., by 2,4,5-T at 0.1, 0.01, 0.001 and 0.0001 p.p.m. or by MCPA at 8, 4, 2, 1 and 0.1 p.p.m. - D.M.L.S. [O.R.]

731. PAYNTER, O.E., TUSING, T.W., McCOLLISTER, D.D. and ROWE, V.K. (Hazleton Lab.Inc.,Falls Church,Va,U.S.A.) Herbicide toxicology. Toxicology of dalapon sodium (2,2-dichloropropionic acid, sodium salt). J.agric.Fd Chem., 1960, 8,(1),47-51, tabs. 7,bibl.5.
The acute oral LD 50 values with 19/20 confidence limits for 5 animal species given single oral doses of dalapon (sodium) ranging from 1.0-15.8 g/kg of body weight were:- male rat 9.33 (8.46-10.3); female rat 7.57 (6.08-8.35); female mouse > 4.6; female guinea pig 3.86 (2.76-5.43); female rabbit 3.86 (2.30-6.50) and New Hampshire red chickens 5.66. Experiments on rabbits showed no penetration of intact skin or permanent eye damage due to solutions of the dry powder of dalapon (sodium). Oral doses of 1 g dalapon/kg body weight had no serious effects on cattle. Haematological and biochemical studies and urinalysis on dogs given 100 mg/kg daily for 1 year and rats given 50 mg/kg daily for 2 years showed no abnormalities apart from an increase in the average kidney weights. Reproduction and lactation were not affected in rats receiving 150 mg/kg daily. Small amounts of dalapon were found in the rat and dog tissues after the 2 and 1 year treatments and in the milk of the lactating rats. - M.E.L. [O.W.]

732. BANDT, H-J. (Inst.Fischerei,Dtsch. Akad.Landw.,Berlin Friederichshagen, Germany). Über die Giftwirkung von Herbiziden auf Fische. [The toxicity of herbicides to fish.] Z.Fisch., 1957, 6,(1/7), 121-5, tabs.2,bibl.15.
Includes the information that potassium chlorate began to show toxic effects on roach and perch at 2500-3000 p.p.m. in an aquarium test and was therefore about 4 times more toxic than sodium chlorate or TCA. - L.K. [210(43)]

733. BARNES, J.M. (Toxicology Unit, M.R.C.) Toxicity of pesticides. Bull.Hygiene, 1959, 34, (12),1214, bibl.69.
A review including the toxic action to humans of DNOC and PCP. There is no specific therapy for either herbicide. Absorption of DNOC but not PCP can be detected by blood estimations. - M.E.L. [406(42)]

734. UNITED STATES. A summary of certain pesticide chemical uses. [Mimeo.Publ.U.S.Dep. Agric., 1957 (+ appendices).
These data sheets are published as aids to registrants in preparing acceptable labels. They list, for each compound: the crops, permitted residues, the rate applied and any limitations. - L.K. [W28(73)]

735. SHKLYAR, M.Z., VOEVODIN, A.V. and MARKOVA, V.G. [The effect of 2,4-D and chlorpropham on the development of some soil microorganisms.] Bull.Nauchno-Tekh. Inf.Selsk.Mikrobiol., 1959, (4),14-8, (Russ.)
2,4-D and chlorpropham at the rates used in practice did not inhibit the development of fungi, Azotobacter, butyrate bacteria or aerobic cellulose decomposing bacteria and bacteria growing on MPA. - Ref.Zh.Biol., 1960, 14843.

736. ARNDT, F. (Inst.Pflsch.,Landw. Hochschule,Stuttgart-Hohenheim,Germany). Einfluss verschiedener Eigenschaften des Bodens auf die Herbizide Wirkung von Cyclo-octyl-dimethylharnstoff (CIU). [The effect of different soil properties on the herbicidal action of cyclooctyldimethylurea (CIU).] Z.PflKrankh., 1960, 67,(1),25-30, (G.e.), tabs.3,bibl.6.
The influence on the activity of CIU of the hygroscopicity, humus content, T-value (after Mehlich), settling (abschlämmbare Teile), pH, $P_2O_5$ and $K_2O$ content and degree of adsorption of 8 soils was determined by the Cress test. There was a close negative correlation between adsorption and herbicidal activity (and also between hygroscopicity, humus content and T-value - which are in turn closely related to adsorption). PH between 4.16 and 7.9 and $P_2O_5$ and $K_2O$ content had no effect. - L.K. [209(43)]

## APPLICATION AND MACHINERY

737. INTERNATIONAL. International Agricultural Aviation Conference. Preprints, 1959.
Papers submitted included those concerned with: (1) hill pasture improvement, (2) droplet size and drift, (3) weed spraying, (4) application techniques, (5) corrosion, (6) economic aspects and (7) safety and flying. - L.K. [O.W.]

738. GREAT BRITAIN. Principal agricultural aircraft of the world. Aeroplane, 1959, 97,(2500), 240-5.
Photographs and brief descriptions of 36 planes. - L.K. [405(42)]

739. SCHIPSTRA, K. Het landbouw-loonspuitbedrijf in Nederland. [Agricultural contract spraying in the Netherlands.] Landbouwvoorlichting, 1960, 17,(2),52-8.
From Landbouwdocumentatie, 1960, M 1102.

740. DANIELSON, L.L. (U.S.Dep.Agric.,Beltsville,Md,U.S.A.) A granular herbicide distributor for small experimental plots. Crops Res.,U.S.Dep.Agric., 1960, ARS-34-11, pp.6, figs.4,tabs.1.
A hand-propelled distributor for broadcast or band application is described and illustrated and performance data and construction details given. The basic metering device is an auger which turns in an aluminium tube slotted alternately on the top and bottom. - D.M.L.S. [94(75.2)]

## PHYSIOLOGY, MORPHOLOGY AND ANATOMY

741. KOOPMAN, H., UHLENBROEK, J.H., HAECK, H.H., DAAMS, J. and KOOPMANS, M.J. (Philips Duphar,'s-Graveland,Netherlands). Investigations on herbicides II. 2-Alkyloxy- and 2-aryloxy-4,6-dichloro-1,3,5-triazines. 2-Alkylthio- and 2-arylthio-4,6-dichloro-1,3,5-triazines. Rec.Trav.chim.Pays-Bas, 1959, 78,(11),967-80, tabs.5,bibl.14.
Describes the synthesis, phytotoxicity and fungitoxicity of 60 4,6-dichloro-1,3,5-triazines substituted in the 2 position with alkyloxy, aryloxy, alkylthio or arylthio groups. Results showed: the most active compounds were those with 3-6 carbon atoms in the substituent alkyl group. The activities of alkyloxy- and 2-alkylthio-compounds with substituents in the alkyl group were approximately the same as the activities of the unsubstituted derivatives. 2-Aryloxy- and 2-arylthio- derivatives had no phytotoxic properties.
In field experiments 1% solutions of 2-butoxy and 2-butylthio-4,6-dichloro-1,3,5-triazine (ca. 9 %) killed Chenopodium album, Stellaria media, and Urtica urens, but not Poa annua. - H.E.L. [O.R.]

742. KOOPMAN, H. and DAAMS, J. (Philips-Duphar, 's-Graveland, Netherlands). Investigations on herbicides III: 2,4-disubstituted 6-chloro-1,3,5-triazines. Rec.Trav.chim. Pays-Bas, 1959, 79,(1),83-9, tabs.2, bibl.6.

Describes synthesis of 13 2,4-disubstituted 6-chloro-1,3,5-triazines. Their phytotoxicity was determined by (a) estimating the leaf damage to 3-4 week old oat, bean and tomato plants 10 days after spraying with 1% and 3% solutions in acetone (= 9 # and 27 #); (b) estimating by weight after 10 days the effects of stem applications of 30mg of a lanolin paste (25 mg triazine in 2 g lanolin) to broad bean plants just above the primary leaves; (c) estimating by weight after 10 days the effects of watering roots of oat plants 10 cm high with 25 ml 0.1% solution of triazines. Results showed that activity shown by watering roots < spraying leaves. The compounds causing the most rapid and severe leaf damage were:- 2-butyloxy-4-butylthio-, 2-butyloxy-4-pentylthio-, 2,4-diethylthio-, 2-ethoxy-4-ethylthio-, 2,4-dibutylthio-, 2-butylthio-4-isopentylthio- and 2-allyloxy-4-butyloxy-6-chloro-1,3,5-triazine. The relative toxicities of the less active compounds were 2,4-diallyloxy- = 2-butyloxy-4-isopropylamino- > 4-ethylamino-2-ethylthio- = 2-butylthio-4-isopropylamino- > 2,4-diethoxy- > 2-ethoxy-4-ethylamino-6-chloro-1,3,5-triazine. - M.E.L. [O.R.]

743. OKUNTSOV, M.M. and ZYRYANOVA, G.D. [The effect of herbicides on plant metabolism.] Isv.Tomsk.Bot.O-va., 1959, 4, 87-90, (Russ.).
The effect of 2,4-D on the metabolism of orache, Bromus and lupin was investigated. It was concluded that 2,4-D appears to affect a number of basic oxidative and hydrolytic enzymes which leads to the complete or nearly complete hydrolysis of the basic plant substrates. The hydrolysate is then consumed in respiration. - From Ref.Zh. Biol., 1960, 15304. - L.K.

744. ZAKIROV, M.Z. [Changes in the carbohydrate and nitrogen metabolism during cotton defoliation. Uzb.biol.Zh., 1958, (1), 19-24, (Russ.).
Sodium cyanamide, calcium cyanamide and endothal were found to decrease the protein and total nitrogen and increase the amine N and to decrease the amount of soluble sugars and increase that of the maltose type. - From Ref.Zh.Biol., 1960, 15309. - L.K.

745. * ZAKIROV, M.Z. [The effect of defoliants on the carbohydrate and nitrogen metabolism of cotton leaves.] Diss.Inst. Bot.AN SSSR, Tashkent, 1959.

746. SHUEL, R.W. (Agric.Coll.,Guelph, Ontario,Canada). Studies of nectar secretion in excised flowers. II. The influence of certain growth regulators and enzyme inhibitors. Canad.J.Bot., 1959, 37,(6),1167-80, figs.2,tabs.7,bibl.24.
Concentrations of 5 x $10^{-4}$ M of 3-indoleacetic acid (IAA), α-naphthylacetic acid, or 2,4-D usually reduced nectar secretion in excised flowers of Antirrhinum majus cultured on sugar solutions. The major part of the reduction occurred at relatively low concentrations. Although ovary growth was promoted by the compounds, increased growth did not appear to have caused the reduced nectar yields. - From Author's Summary. - D.M.L.S. [O.R.]

747. SRIVASTAVA, M.G. (Bose Inst.,Calcutta, India). Cytological responses of plants to aminotriazole. Trans.Bose Res.Inst., 1956-8, 21,119-128.
Seedlings of Pisum sativum were immersed in solutions containing 100, 200, 1000 and 5000 p.p.m. of amitrol for 2 and 24 hours respectively. The root tips were fixed in a mixture of rectified spirit and concentrated HCl 3:1. They were transferred to acetocarmine stain after 1.5 hours, and squashes were made with the iron-aceto-carmine technique. Some root tips from each treatment were fixed in acetal-alcohol (1:3) and stained in leucobasic fuchsin for testing the effect of amitrol on stainability of the chromosomes. The nucleic acid was not affected by amitrol even at 1000 p.p.m. Amitrol reduced the frequency of cell division and, in very high concentrations, delayed mitosis, resulting in reduced frequency of anaphases. Cytological abnormalities, such as bridges, sticky chromosomes, excessive longitudinal condensation of chromosomes, and late separation caused by amitrol were discussed and interpreted. Recovery of the treated seedlings in running $H_2O$ for 24 and 48 hours had little effect on the frequency of divisions or aberrations. It was concluded that the weedicidal effect of amitrol is due to its mitostatic nature of action which paralyses vital functions when applied in herbicidal concentrations. - Chem.Abstr., 53, 20312h.

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Substitution in the 4 position was found to influence the growth regulating activity of mono-, di- and tri- substituted chlorophenoxyacetic acids and of 3-aryl-1-alkyl substituted ureas more than any other position, whereas the greatest activity of O-alkyl N-aryl carbamates was found when the substitution occurred in the 3 position. All 3 groups were found to influence both nitrogen and carbohydrate metabolism. Respiration of tissue slices and oxygen uptake by mitochondria were inhibited by representative members of each group. Inhibition of enzymes of the Krebs cycle by 2,4-D was found to be general rather than specific, and not competitive. Inhibition of oxygen uptake was found to be reversible in that removal of 2,4-D resulted in recovery of oxidative activity.

Data presented in this study were interpreted as indicating that adsorption on proteins is the primary event in the action of growth regulators. Other data indicate that the structure of the protein is modified as a consequence of the adsorption of the chemical. This will be reflected in a change in the enzymatic activity of the protein. This adsorption of the chemical on the protein surface, and subsequent change in the protein's enzymatic activity, are suggested as the means by which growth regulators act. - J.W.B. [O.F.]

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Quaternary salts formed by treating 1-(2-pyridyl)isoquinolines or the 3,4-dihydro analog thereof with ethylene dihalides or disulfonates are described as effective herbicides. A mixture of 1 part of 1-(2-pyridyl) isoquinoline (I) and 10 parts of ethylene dibromide is heated at 140-50° during 9 hours. The mixture is filtered, and the solid is dissolved in $H_2O$. The aqueous solution is treated with activated C, and the product is precipitated by the addition of acetone to give 3,4-benz-N,N'-ethylene-2,2'-bipyridinium dibromide (II), m. 312° (with decomposition). The use of nitrobenzene as a solvent gave the same product after 3 hours at 160-70°. The reaction of 1 part (I) with 3 parts ethylene bis(p-toluenesulfonate) gave the bis(p-toluenesulfonate) salt corresponding to (II). 1-(2-Pyridyl)3,4-dihydroisoquinoline (6 parts) and 50 parts of ethylene dibromide are heated at 140-50° during 12 hours, and the reaction mixture is poured into 100 parts of acetone. The solid is triturated with acetone to give 3,4-benz-5,6-dihydro-N,N'-ethylene-2,2'-bipyridinium dibromide (III), a hygroscopic solid. (II) and (III) at 2000 p.p.m. concentration in the spray gave complete kill of seedling plants of kale (Brassica oleracea) and sugar beet (Beta vulgaris) and very severely damaged mustard (Brassica alba), wild oats (Avena fatua), and cleavers (Galium aparine). Trifolium repens was killed by (II) and very severely damaged by (III). - Chem.Abstr., 53,20679 i.

754. VEGTER, G.C., HACKMAN, J.T., ten HAKEN, P. and BARNSLEY, G. Herbicidal compositions containing bis(2,2,2-trichloro-1-hydroxyethyl)sulphide. British Patent, 1959, 815 570.

The title compound (I) prepared by reaction of $H_2S$ with chloral in concentrated aqueous solution is an effective herbicide, particularly useful in pre-emergent application for control of wild oats. The inherent instability of (I) in the presence of $H_2O$ is decreased by incorporation into the composition of up to 50% chloral or chloral hydrate. (I) is markedly more toxic to monocotyledonous than to dicot-

yledonous seeds. For example, the amount required to cause 90% inhibition was 2.4 # for wild oats (Avena fatua), but 8.1 # for mustard (Brassica alba). (I), trichloroacetic acid (II), and the sodium salt of (II) (III) are compared as follows (dosage, % reduction of fresh weight by (I), by (II), and by (III)): 3.4, 54, 45, 7; 5.2, 59, 52, 17; 7.4, 74, 66, 53; 10.8, 72, 74, 70; and 16.0, 88, 80, 75. - Chem.Abstr., 53,20679 h.

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Substituted benzyl quaternary ammonium compounds. To Monsanto Chem.Co. - From Chem.Zbl., 130,15489. - L.K.

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Compositions containing sulfenamides (I) or thiosulfenamides (II) kill Bermuda grass. Thus, 1% solutions of (I) or (II) in a HF heavy alkylate (an isoparaffinic hydrocarbon fraction b. 260-800°F.) were applied in an amount of 10 ml/plug of Bermuda grass growing in 4-in. flower pots. Good control was observed with the following compounds: N,N-diethyl-tert-butylthiosulfenamide, phenylsulfenylmorpholine, tert-butylthiosulfenylpiperidine, phenylsulfenylpiperidine, N,N-bis(2-ethylhexyl)-tert-butylsulfenamide, and tert-butylthiosulfenylmorpholine. Effects on beans, corn, radishes, rye grass, millet, and cotton were also evaluated. - Chem.Abstr., 53,20680 e.

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## MISCELLANEOUS

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Fisons Pest Control have announced that simazine is to be distributed in the U.K. by Fisons and the Murphy Chemical Company under the name "Guesatop" and by Shell under the name "Bladex". - D.M.L.S. [O.R.]

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Maryland, 1959, 181,pp.20, figs.9.
In addition to a brief section on brush control by 2,4-D, 2,4,5-T, AMS, amitrol, and 2,4,5-TP, some of the information given in Weed Abstracts 9, 2 is repeated. - J.W.B. [95(75.2)]

768. FLANDIN, P. L'uree en melange avec les desherbants .... fait d'une pierre deux coups. [Urea mixed with herbicides .. .. kills two birds with one stone.] Fruits Prim.Afr.N., 1959, 29,(303),111-14, (F.), Urea (fertiliser) can be applied to cereals in solutions of either hormone or dinitro herbicides; an economy of labour and tractor fuel and a reduction of risk of tractor injury to the crop is thereby effected. Full instructions are given for dissolving urea in low volumes and mixing it with the herbicide solutions. - D.M.L.S. [M.D.H.]

Noted

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p.261-80. Colonial Pesticides Research Committee Twelfth Annual Report.
Includes very brief descriptions of work in progress at the A.R.C. Unit of Experimental Agronomy, Oxford; Long Ashton Research Station; Colonial Pesticides Research Unit, East Africa; I.C.T.A. Herbicide Unit, Trinidad; Antigua; Fiji; Kenya and Nigeria. - L.K. [O.W.]

ERRATA

Species Index Volumes 7 and 8.

Ipomoea batatas

In Volume 7, No. 1034 and Volume 8, No. 1422 should read Dioscorea spp.

## List of Common Names and Chemical Abbreviations

Revised April, 1960.

The following list, based on that adopted by the Weed Society of America has been approved by the British Weed Control Council, except those marked □.
An asterisk (*) signifies common names approved by the B.S.I.
A plus sign (+) signifies approval by the Weed Society of America.

| | |
|---|---|
| amiben □+ | 3-amino-2,5-dichlorobenzoic acid |
| amitrol +□ | 3-amino-1,2,4-triazole. |
| AMS □+ | ammonium sulphamate |
| atrazine □+ | 2-chloro-4-isopropylamino-6-ethylamino-1,3,5-triazine |
| barbane □+ | 4-chloro-2-butynyl-N-(3-chlorophenyl)carbamate |
| CDAA + | 2-chloro-N,N-diallylacetamide |
| CDEA + | 2-chloro-N,N-diethylacetamide |
| CDEC + | 2-chloroallyldiethyldithiocarbamate |
| chlorpropham * | isopropyl-N-(3-chlorophenyl)carbamate |
| 4-CPA + | 4-chlorophenoxyacetic acid |
| 4-CPB | 4-(4-chlorophenoxy)butyric acid |
| 2,4-D +* | 2,4-dichlorophenoxyacetic acid |
| 3,4-DA + | 3,4-dichlorophenoxyacetic acid |
| dalapon +* | 2,2-dichloropropionic acid |
| 2,4-DB * | 4-(2,4-dichlorophenoxy)butyric acid |
| DCU +□ | dichloralurea |
| 2,4-DEB + | 2,4-dichlorophenoxyethyl benzoate |
| 2,4-DES +* | sodium 2,4-dichlorophenoxyethyl sulphate |
| dichlone +* | 2,3-dichloro-1,4-naphthaquinone |
| dinosam * | 2-s-amyl-4,6-dinitrophenol |
| dinoseb * | 2-s-butyl-4,6-dinitrophenol |
| diquat + | 1,1'-ethylene-2,2'-dipyridylium dibromide |
| diuron + | N-(3,4-dichlorophenyl)-N',N'-dimethylurea |
| DMTT +□ | 3,5-dimethyltetrahydro-1,3,5,2H-thiadiazine-2-thione |
| DNOC * | 2-methyl-4,6-dinitrophenol or 3,5-dinitro-o-cresol |
| 2,4-DP | 2-(2,4-dichlorophenoxy)propionic acid |
| endothal + | 3,6-endoxohexahydrophthalic acid |
| EPTC +□ | ethyl-N,N-dipropylthiolcarbamate |
| erbon + | 2-(2,4,5-trichlorophenoxy)ethyl-2,2-dichloropropionate |
| fenac □ + | 2,3,6-trichlorophenylacetic acid |
| fenuron + | N-(phenyl)-N',N'-dimethylurea |
| ipazine □+ | 2-chloro-4-diethylamino-6-isopropylamino-1,3,5-triazine |
| MCPA +* | 4-chloro-2-methylphenoxyacetic acid |
| MCPB * | 4-(4-chloro-2-methylphenoxy)butyric acid |
| MCPES + | sodium 4-chloro-2-methylphenoxyethyl sulphate |
| mecoprop * | dl-2-(4-chloro-2-methylphenoxy)propionic acid |
| MH +□ | maleic hydrazide |
| monuron +* | N-(4-chlorophenyl)-N',N'-dimethylurea |
| neburon + | N-(3,4-dichlorophenyl)-N'-butyl-N'-methylurea |
| NPA + | N-1-naphthylphthalamic acid |
| PCP + | pentachlorophenol |
| PMA + | phenyl mercuric acetate |
| propazine □+ | 2-chloro-4,6-bis(isopropylamino)-1,3,5-triazine |
| propham * | isopropyl-N-phenylcarbamate |
| simazine+ | 2-chloro-4,6-bis(ethylamino)-1,3,5-triazine |
| SMDC +□ | sodium methyl dithiocarbamate |
| 2,4,5-T +* | 2,4,5-trichlorophenoxyacetic acid |
| 2,4,5-TB | 4-(2,4,5-trichlorophenoxy)butyric acid |
| 2,3,6-TBA + | 2,3,6-trichlorobenzoic acid |
| TCA + | trichloroacetic acid |
| 2,4,5-TES + | sodium 2,4,5-trichlorophenoxyethyl sulphate |
| 2,4,5-TP | 2-(2,4,5-trichlorophenoxy)propionic acid |
| trietazine □+ | 2-chloro-4-diethylamino-6-ethylamino-1,3,5-triazine |
| 3Y9 □ | tris-(2,4-dichlorophenoxyethyl)phosphite |

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